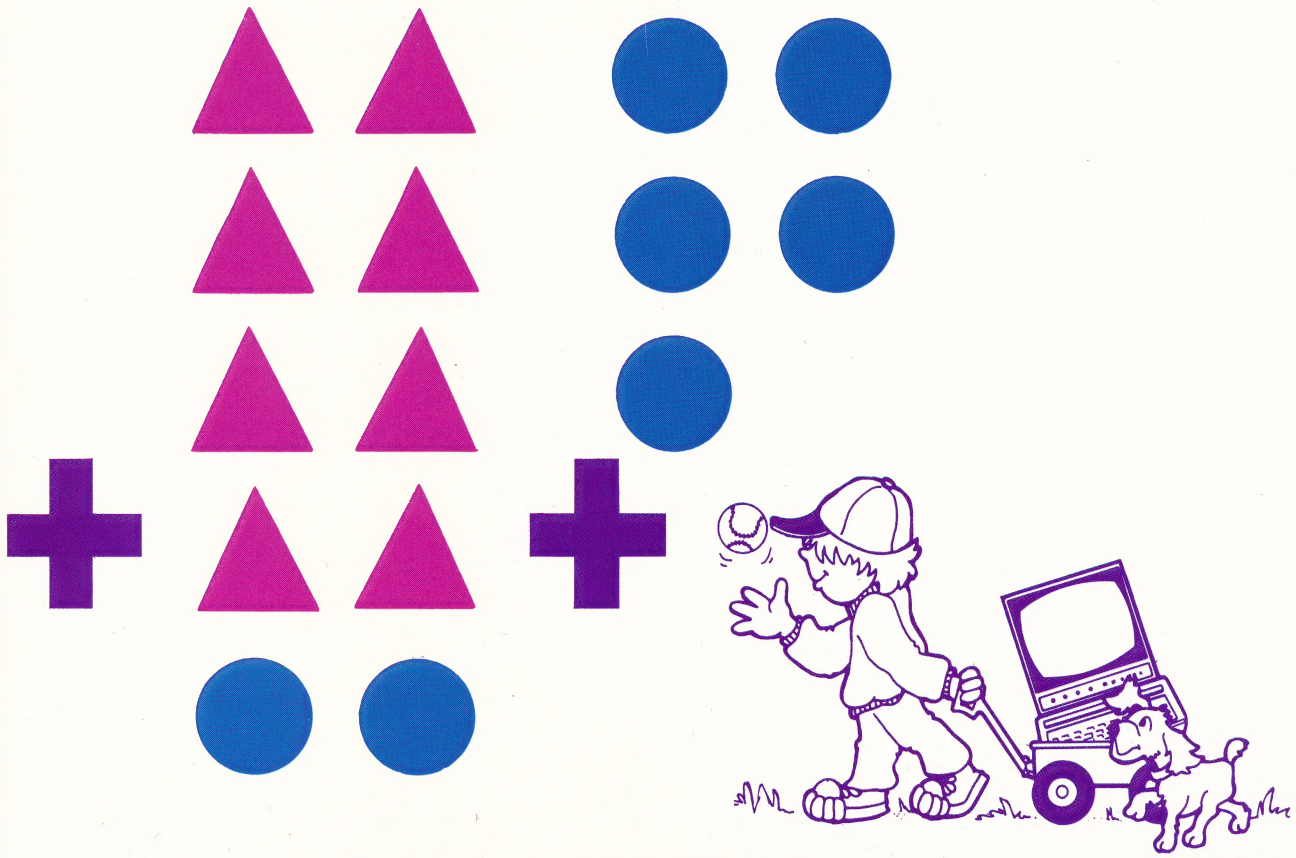
Building TENS Strategy



$$10 + 5 = 15$$

Hartley

Building TENS Strategy

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Hartley Courseware, Inc.

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This Hartley program requires a 48K *Apple II, II+, IIe, IIc, IIc+, or IIGS, or Franklin ACE 1000, and one disk drive.

*Apple II, II+, IIe, IIc, IIc+, and IIGS are registered trademarks of APPLE COMPUTER, INC. Apple Computer makes no warranties, either express or implied, regarding the enclosed software package, its merchantability or its fitness for any particular purpose.

050389

Just the Facts

1. Backup disks: Backups are provided in some packages. If backup disks are not included, they may be purchased by returning the red certificate enclosed in the package along with $10 (plus $2 shipping). Unless specified in the documentation, disks may NOT be copied without permission from the publisher.

2. Computer Center Paks (CCPaks): These provide multiple copies for use within a single school building. Disks from a computer center pak are not to be used in more than one building. Customized CCPaks will be built for a school on request.

3. Multi-Load: Some programs are specifically designed to multi-load. This is indicated in the respective teacher's manual. Many programs, however, require the master disk to be in the drive to load additional information or graphics when the programs require it. If it is possible to load all information into the computer memory at one time, and the program will run properly when the disk is removed, then you have Hartley's permission to use the program in this manner.

4. Networks: Programs may be licensed for hard disk networks (such as Corvus). You can't simply load a program onto your hard disk. Because of the student management, a special network version of the program is required. Since network technology changes rapidly, contact the Hartley office for the most recent information on networks and pricing. 1-800-247-1380 (in Michigan, 1-517-646-6458)

5. 3.5 inch disks are available for most Apple and IBM programs. The order blank in the Hartley catalog indicates present availability for specific titles. If you have a 5.25 inch disk and wish to exchange it for a 3.5 inch disk, you may do so at no charge within the 60-day unconditional warranty period. After that time, there is a $10 update charge.

6. Replacement of Disks: Programs damaged for any reason will be replaced at no charge for 60 days after purchase. After the 60 day period, there is a $10 replacement charge. Please call the Hartley office for a Return Authorization Number (RA#).

CONTENTS

1.0 Purpose 1

2.0 Booting the Disk 1

3.0 Running Building TENS-DISK A 2

- 3.1 Count Dots (1-5) 3
- 3.2 Count Dots (5-10) 5
- 3.3 Dots Flash 5
- 3.4 Build a Ten (#1) 6
- 3.5 Build a Ten (#2) 7
- 3.6 Suggestions for Supplementary Activities 8

4.0 Running Building TENS-DISK B 9

- 4.1 Build a Ten 10
- 4.2 Build a Ten w/o dots 11
- 4.3 2 Digit + 1 Digit w/o dots 12
- 4.4 Practice Problems 12
- 4.5 Suggestions for Supplemental Activities 14

5.0 Recordkeeping 15

6.0 Answer Keys to Worksheets 21

1.0 PURPOSE

Building TENS Strategy has been developed to help students learn alternative methods of simple addition. The advanced addition facts are very troublesome for students and quickly forgotten. By helping your students build a strategy for handling these problems, they will be able to recall the strategy much more quickly than the facts. They will also develop a better understanding of the number system and they will be able to apply this technique to more difficult problems.

These programs are designed to help children at different stages as they internalize building tens strategy. The content spans two grade levels. A child would not be expected to complete all of the lessons without practice over an expanded period of time. (See Suggestions for Supplementary Activities.)

2.0 Booting the Disk

This disk will boot on a 3.3 Disk Operating System.

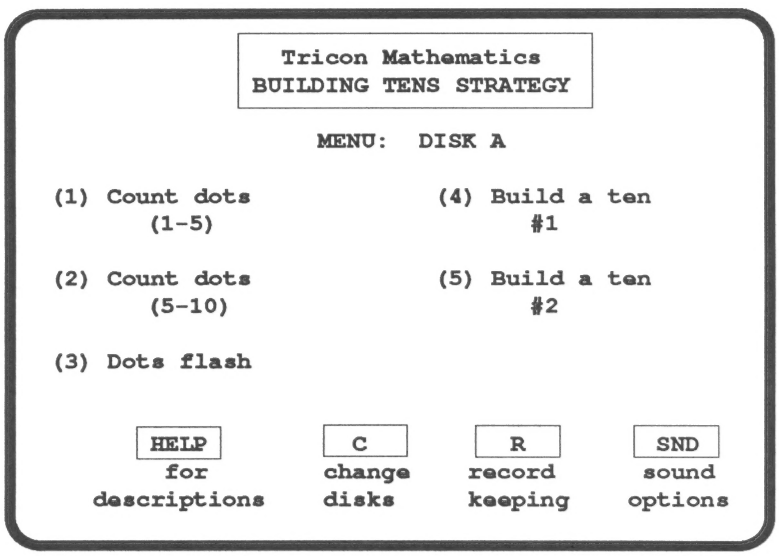
When running this program on the Apple IIc, IIc+, IIe, or IIGS, you must keep the **CAPS LOCK** key down. Keep the **LOCK** key down when using the Franklin ACE 1000.

Put the disk in Drive #1; close the door. The disk will boot automatically when you turn on the computer.

There is an **ESC**ape option on this program. Pushing the **ESC** key whenever a response is called for will terminate the program. The program keeps track of what had been attempted to that point.

3.0 Running Building TENS - DISK A

The credits will clear and the MENU for DISK A appears:



Let's look at the options at the bottom of the MENU before getting into the lessons. The options are the same for both DISK A and DISK B.

HELP

If you push **H**, the screen that appears gives you the option of seeing

(1) Command descriptions
These simply tell you what **HELP, C, R** and **SND** mean. (In case you don't like to read the documentation!)

(2) The Lesson descriptions for DISK A give you a list of the skills covered in the 5 different lessons.

```
                LESSON DESCRIPTIONS

(1):  Student counts dots with sets of five or
      less.

(2):  Student counts dots, five to ten in each
      set.

(3):  Dot patterns flash briefly, to develop
      pattern recognition.

(4):  Introduction to building tens.

(5):  Student builds tens by moving dots.
      (Two patterns)

                Press return.
```

After pressing **RETURN** you will be back to the MENU ready to start a lesson.

C allows you to boot the other lesson disk. This is convenient for schools that have the on/off switch in inaccessible places.

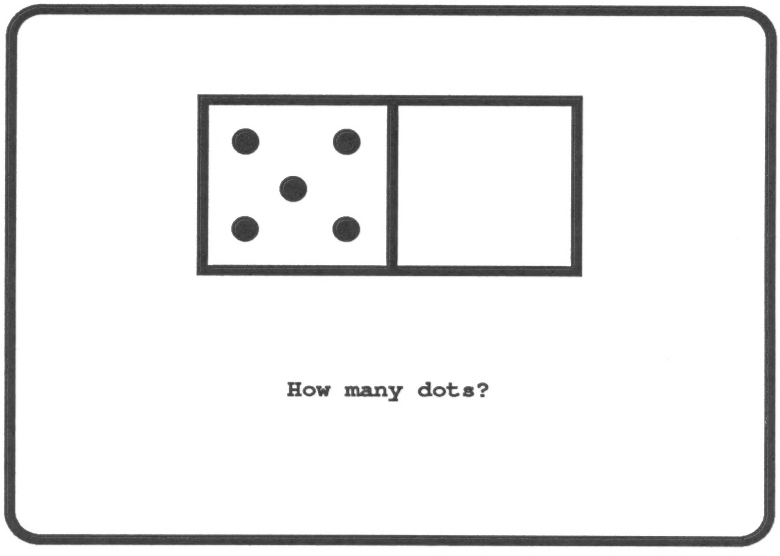
R Recordkeeping - This program keeps track of the students' progress. This is described in detail on page 14.

SND allows you to turn the sound on or off. Sound can be motivational to some students. Others find it distracting. Once you set the sound option on or off, it will remain in that position even after the computer is turned off. It may be reset again at any time by the teacher.

Now let's look at each lesson in more detail.

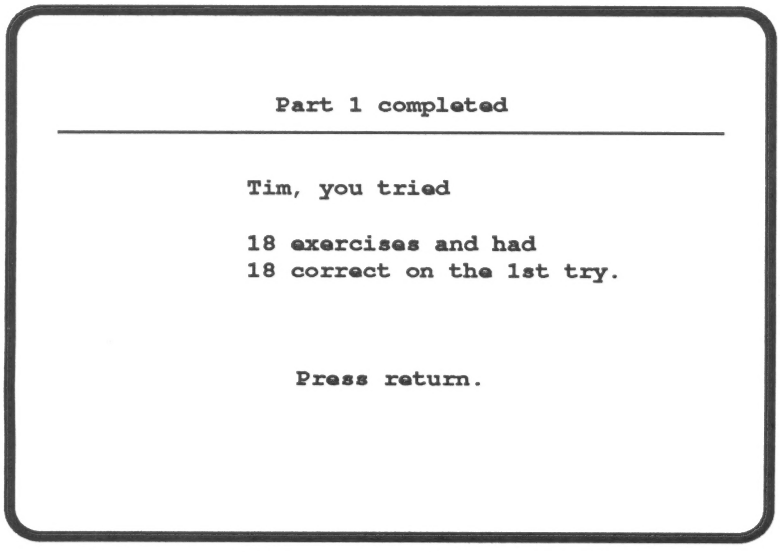
3.1 Count dots (1-5)

After typing your name when requested, the first frame of the lesson appears:



The student should count the dots and type the answer. If incorrect, a "Sorry, try again" message appears and the student is given another try. After 3 incorrect answers, the correct answer is given and the 'dots' appear in red. If a correct answer is given, the computer moves to the next exercise.

When the lesson is completed, either by answering all the questions or pressing the **ESC** key, this frame appears showing the number correct on the first try out of the number of problems attempted.

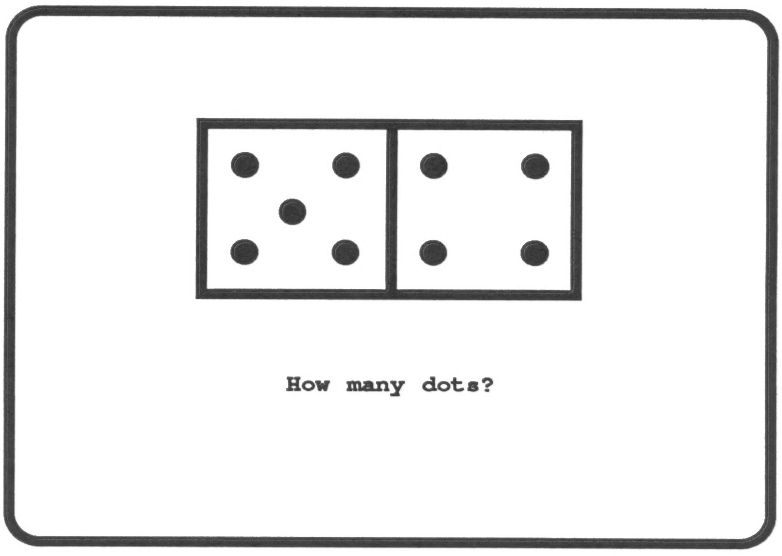


This information is stored in the recordkeeping file for later review by the teacher.

The student is then returned to the MENU ready for another lesson.

3.2 Count dots (5-10)

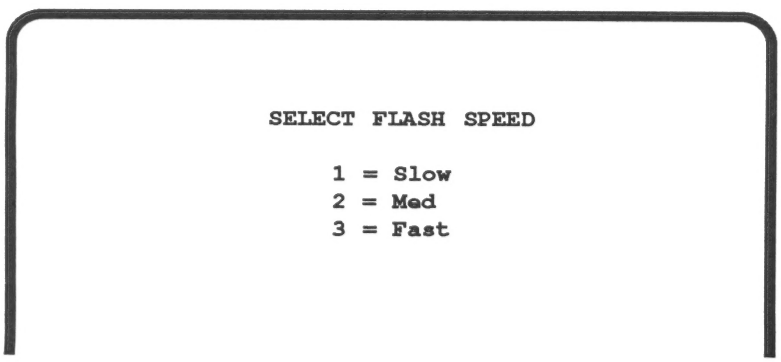
The student is asked to count dot patterns from 5 to 10. They are presented in the following manner:



If incorrect after 3 tries, the dots will turn red and the answer will appear. The student must still type in the correct answer. (If you have the sound option, a 'bleep' accompanies the 'changing of the color' of the dots.) If correct, the next exercise is presented. After completing the lesson, or escaping, the screen will show a summary of problems attempted and the problems correct on the first try.

3.3 Dots flash

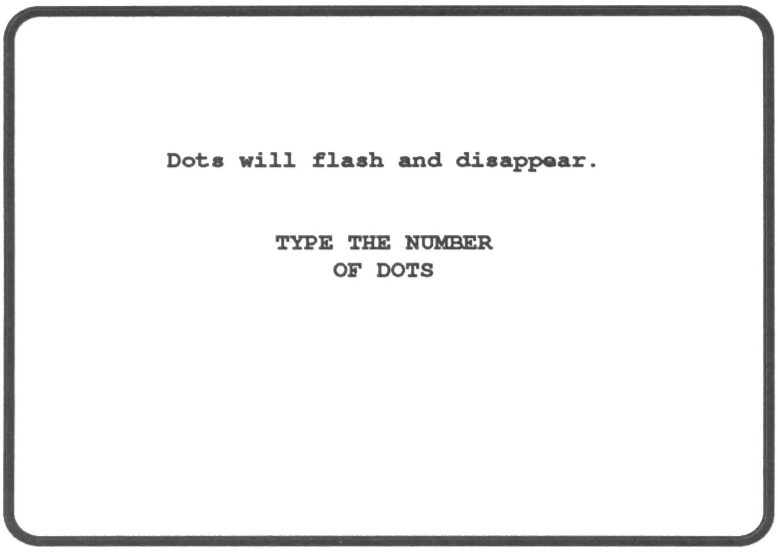
The dots 'flash' on and off. Then the student is asked to type the number of dots he/she saw. The first screen gives you the option of setting the flash speed to challenge the particular student attempting this lesson.



In this lesson, it is important that the student recognize the pattern...not just count the dots.

The SLOW speed leaves the picture on the screen for approximately 2 seconds; the MEDIUM speed approximately 1 second; the FAST speed, less than a second.

Then the instructions to the student are shown:



The teacher will want to read this to young students.

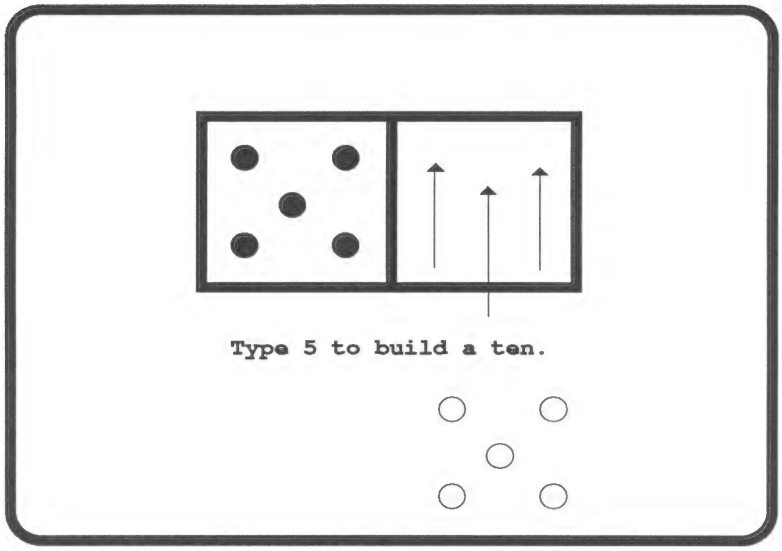
If an incorrect response is given, a "Sorry, try again" message is shown and the picture is flashed once more and then the question

How many dots?

After a series of incorrect responses to one pattern, the picture is then left on the screen allowing the student to count more slowly and answer correctly. If the student consistently misses the answer you may set a slower speed or have him/her repeat lessons 1 and 2.

3.4 Build a ten (#1)

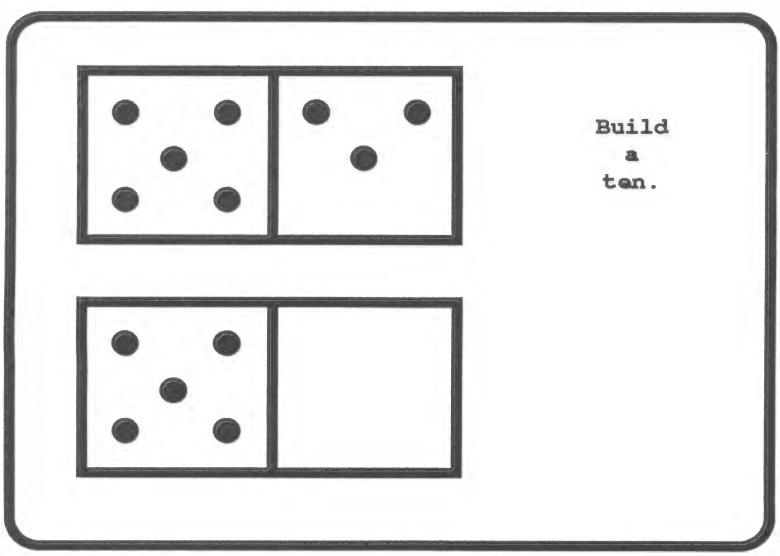
The student is asked to type a number (the number is given) to add to the top pattern to build a ten. When the correct number is typed the dots 'move' to build a ten.



3.5 Build a ten (#2)

Two patterns are presented to the student. An arrow points to the top pattern and asks How many dots? The student is not told how many dots to move as (s)he was in the previous lesson. After the student types the answer, the arrow moves to the bottom pattern and asks the same question.

The next frame shows the two patterns again. The student is asked to Build a ten by typing the number of dots required from the bottom pattern to make a ten in the top pattern. If correct, the dots are moved from the bottom pattern to the top pattern and are shown in white on your color monitor. Then the sum of the two patterns of dots is requested.



If the student misses the sum 3 times the answer will be given. The student presses RETURN and the problem is shown again requiring him/her to type the correct sum.

Supplemental worksheets are included in this package for the five lessons of DISK A. Answer keys to the worksheets are included in the back of this manual.

3.6 Suggestions for Supplementary Activities

Counting dots

Make your own set of "Dot" flash cards. Be sure to use the patterns used on the disk. A page of these patterns is included in this manual. The objective is to have students recognize the pattern without having to count the dots.

The dot patterns may also be used to make your own worksheets.

It is important that you provide additional practice for the students in building tens. Give students frequent practice by using verbal questions.

"I have seven...what do I need to build a ten?"

"If I have eight...how many more do I need to build a ten?"

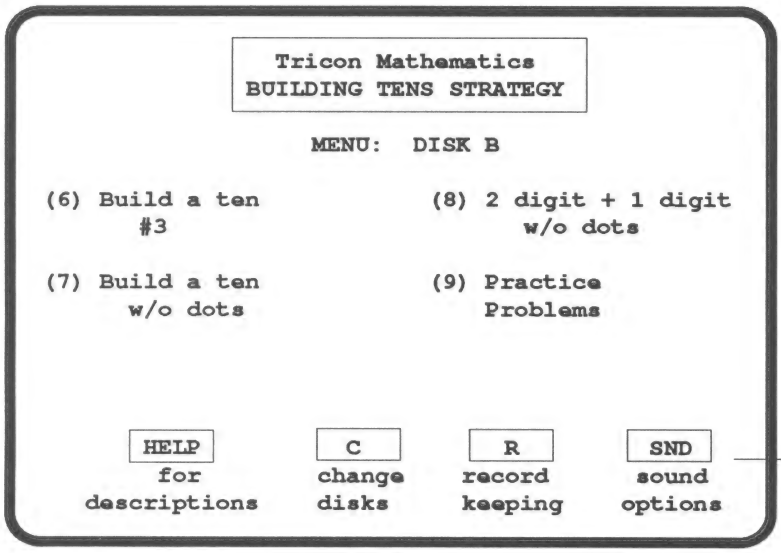
Along with verbal problems on building tens, begin to work with your students on simple verbal subtraction problems.

"If I take one from seven, how many are left?"

Helping your children build tens will take three or four months of practice. Once they learn the basic strategy, it will be much easier to remember and use the strategy than to remember their facts.

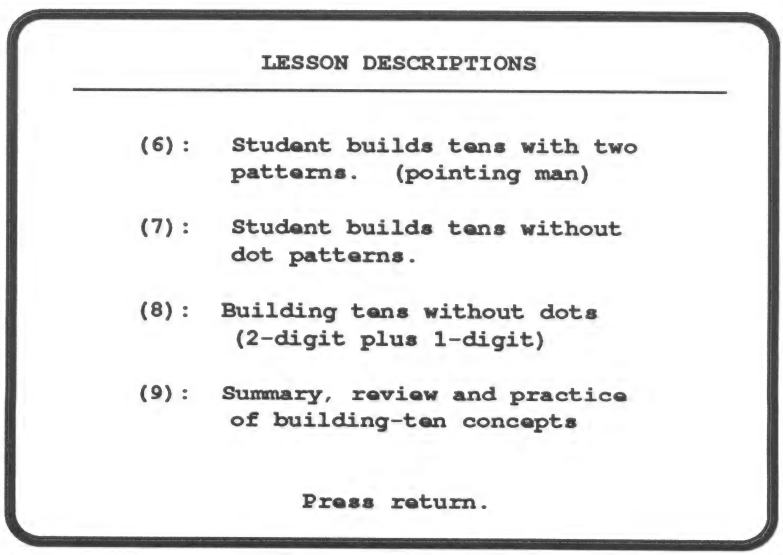
4.0 Running Building TENS - DISK B

Boot DISK B. (Choose C from the MENU of DISK A, and follow the instructions **or** boot DISK B in the regular manner.) The credits will clear and the MENU for DISK B appears:



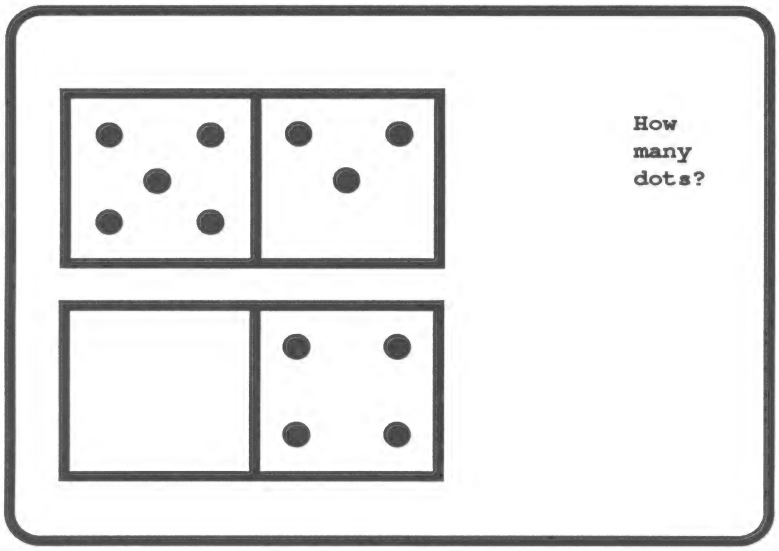
The options on the bottom are the same as on DISK A.

The Lesson descriptions list the skills taught in the four different lessons on DISK B.


LESSON DESCRIPTIONS
(6): Student builds tens with two patterns. (pointing man)
(7): Student builds tens without dot patterns.
(8): Building tens without dots (2-digit plus 1-digit)
(9): Summary, review and practice of building-ten concepts
Press return.

4.1 Build a ten

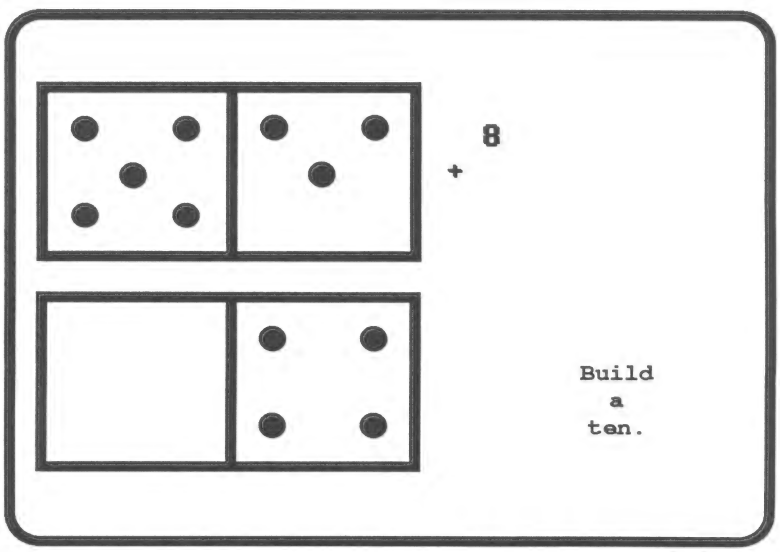
After the student enters his/her name, the first frame of the lesson appears:



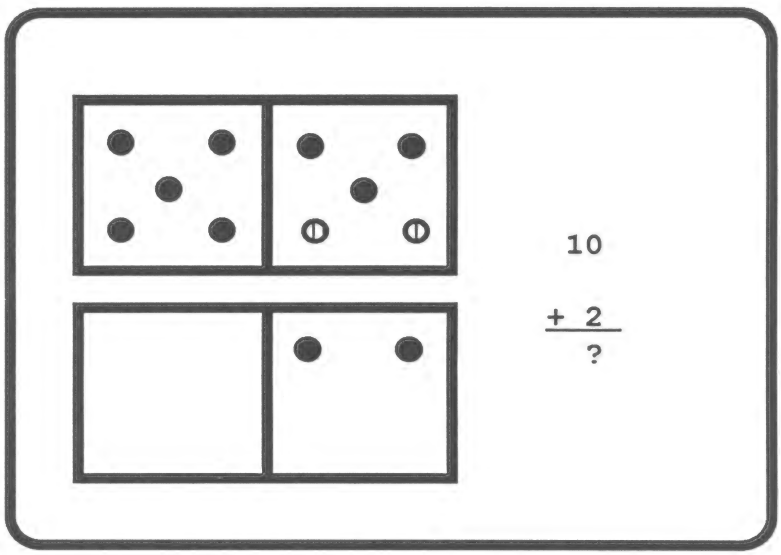
This lesson combines all the skills the student learned in DISK A.

The student should count the number of dots the man is pointing to in the top pattern. If an incorrect answer is given, the man 'shakes his head' and a "Sorry, try again" message appears. If the child types the correct number, the man 'jumps' to the bottom pattern and again asks "How many dots?"

After a correct response, the next frame asks the child to 'Build a ten' by entering the number of dots needed to make 10.



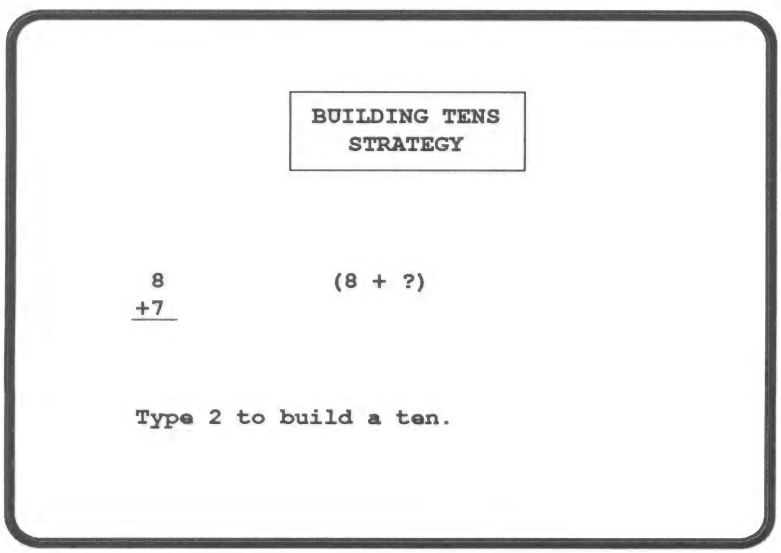
If correct, the dots move to the top pattern. (The dots are in a different color if you have a color monitor.) Again, the man 'jumps' to the bottom pattern and asks "How many dots?" The problem is then presented in addition form and the student has to type the sum. If correct, the man 'frantically waves a flag' in approval.



At the end of the lesson, a brief summary shows the number correct on the first try out of the number of problems attempted.

4.2 Build a ten w/o dots

The problems will be presented in the following format:

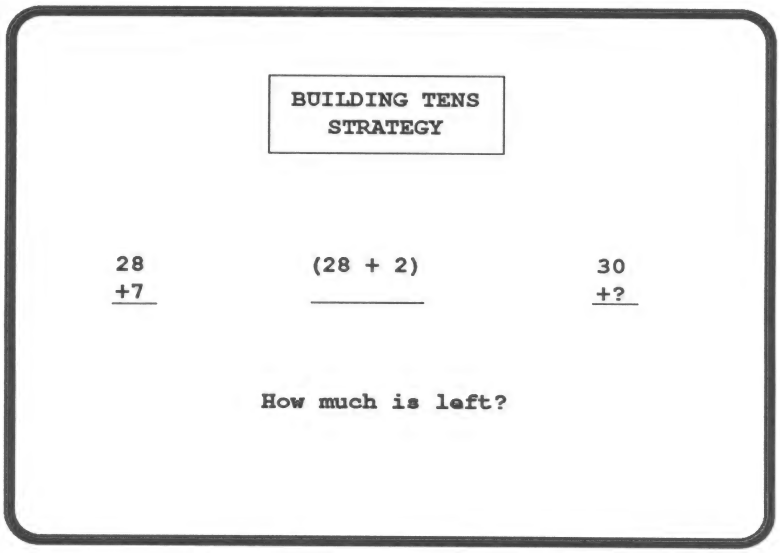


This is the first time a student has to apply the new strategy to familiar problems. The first ten items in the lesson tell the child the number to type. The last ten require the child to determine the number.

For the first ten problems, the student is told the number to type to "build a ten." Then he/she is asked "How much is left?" If correct, the child is asked to "Type the sum."

4.3 2 digit + 1 digit w/o dots

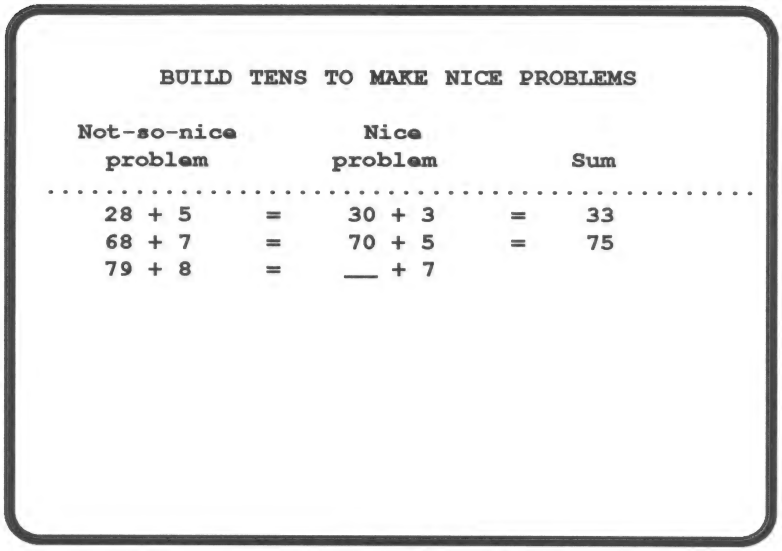
The problems are presented in the same format as in Lesson 7, only the child is working with 2-digit + l-digit numbers instead of single digits.



Again, the student is given the number to type to build a ten. Then he/she must determine "How much is left?" Finally, the student must determine the sum.

4.4 Practice problems

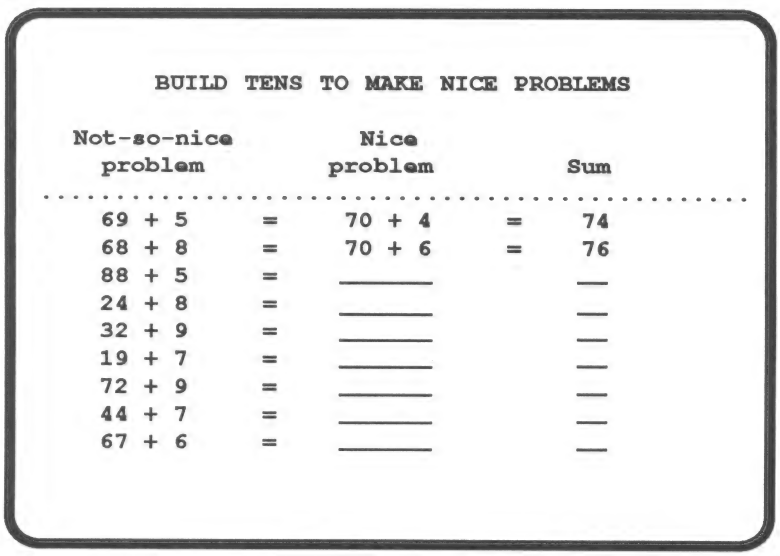
This lessons asks the student to BUILD TENS TO MAKE NICE PROBLEMS from Not-so-nice problems. The first frame offers a tutorial showing what is expected of the child when building a nice problem. By pressing RETURN, the child can watch the computer demonstrate the steps in solving the first two problems. The lesson is set up in the following format. First the child converts the first number to the nearest multiple of ten. The problems are controlled to always round up! Next, the student types the number remaining. Finally, the sum is typed.



BUILD TENS TO MAKE NICE PROBLEMS

Not-so-nice problem		Nice problem		Sum
28 + 5	=	30 + 3	=	33
68 + 7	=	70 + 5	=	75
79 + 8	=	__ + 7		

In the first problems, the computer provides part of the answer. In the next set of problems, the student is asked to actually build the problem, including the + sign.



BUILD TENS TO MAKE NICE PROBLEMS

Not-so-nice problem		Nice problem		Sum
69 + 5	=	70 + 4	=	74
68 + 8	=	70 + 6	=	76
88 + 5	=	_____		__
24 + 8	=	_____		__
32 + 9	=	_____		__
19 + 7	=	_____		__
72 + 9	=	_____		__
44 + 7	=	_____		__
67 + 6	=	_____		__

In this lesson, the student is putting the strategy to work.

Supplemental worksheets are included in this package for the four lessons of DISK B. The answers to the worksheets are in the back of this manual.

4.5 Suggestions for Supplementary Activities

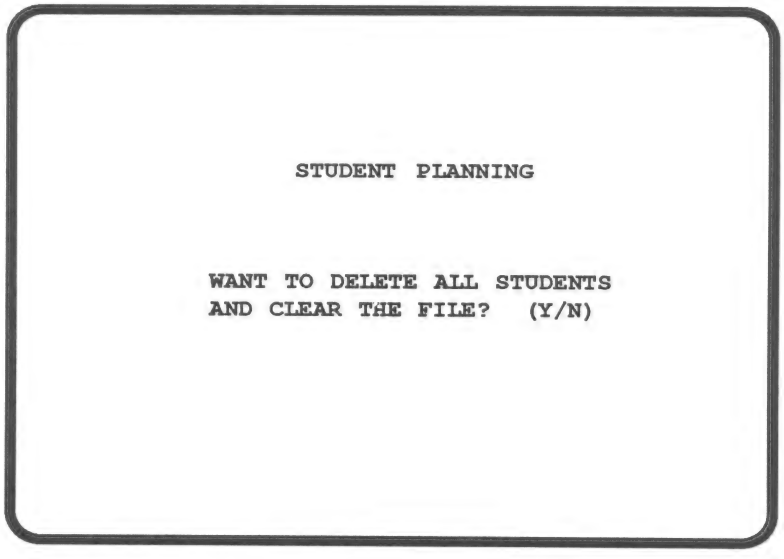
It is important to provide on-going practice for the students. Remember to encourage quick responses by including a few verbal problems as you present your other math lessons each day.

If you did make "dot" flash cards, use them to create games which will build pattern recognition and quick calculation. Have one student flash a "dot" card. "How many to build a ten?" Always use cards with six dots or more. Next, make the game harder. Use two "dot" cards. Again, limit the cards to those with six dots or more. (When the cards are drawn randomly, you want to be sure the total 'dots' will be ten or more.) When your students have mastered the dot cards, switch to regular numbers. Again, limit the cards to numbers of six or greater.

Use the worksheets to supplement each lesson. The most important worksheet may be the last one. If your children have difficulty with it, generate additional practice sheets. ('Nice' problems and 'not-so-nice' problems are not very technical terms, but our students knew exactly what we meant!)

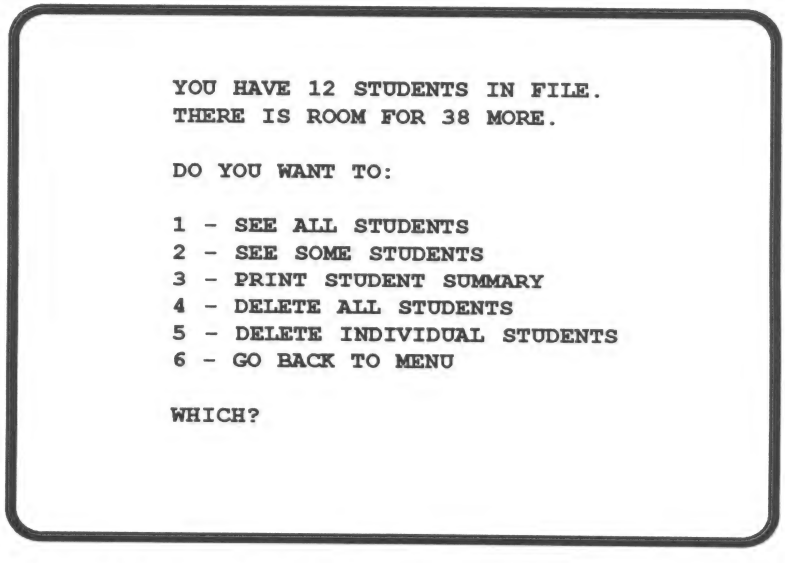
5.0 RECORDKEEPING

As a student works through a lesson, the errors that he/she makes are recorded in the Student Planning (recordkeeping) file. To see this file, bring up the MENU. Select **R** from the bottom of the MENU and this frame appears:



Type **N** if you want to just <u>see</u> the file and not delete the student records. Type **Y** if you are finished reviewing or printing the records for those students and would like to clear the file to make room for more records.

If you typed **N**, indicating you would like to see the file and not erase it, this frame will appear:


YOU HAVE 12 STUDENTS IN FILE.
THERE IS ROOM FOR 38 MORE.
DO YOU WANT TO:
1 - SEE ALL STUDENTS
2 - SEE SOME STUDENTS
3 - PRINT STUDENT SUMMARY
4 - DELETE ALL STUDENTS
5 - DELETE INDIVIDUAL STUDENTS
6 - GO BACK TO MENU
WHICH?

This file will hold up to **50 student records.**

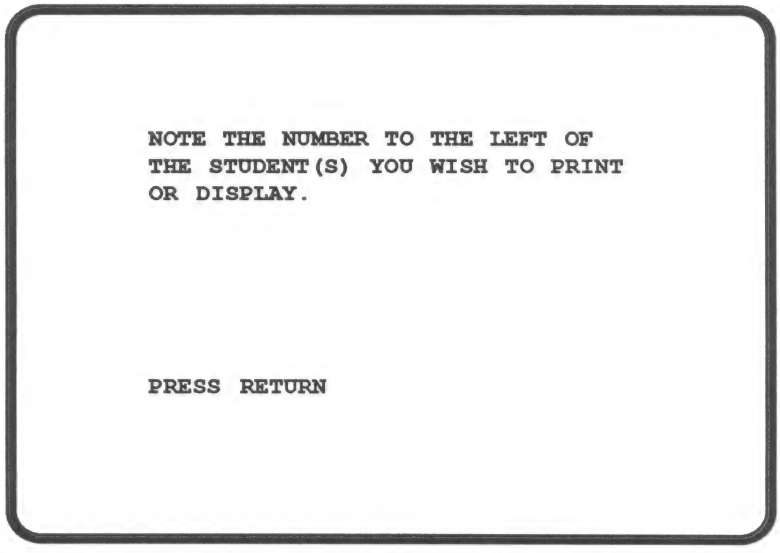
If you wish to see the records for all the students, select **1 - See all students.** The computer will then ask:

ARE YOU USING A PRINTER? (Y/N)

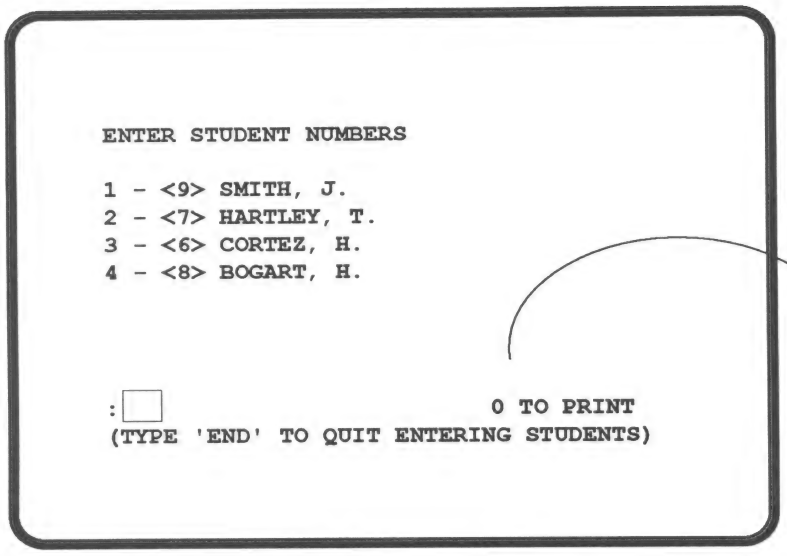
If **Y**, it will ask for the slot number. It will usually be **1** or **2**. If you're not sure, turn off the computer, take off the cover and check the location of your printer card. After entering the slot number, the records will be printed.

If you're not using a printer, student records will be displayed on the screen. Scrolling of results is under control of the user.

If you just want to see some of the students, select **2 - See some students** from the Student Planning menu on page 14 and press RETURN. This frame appears:



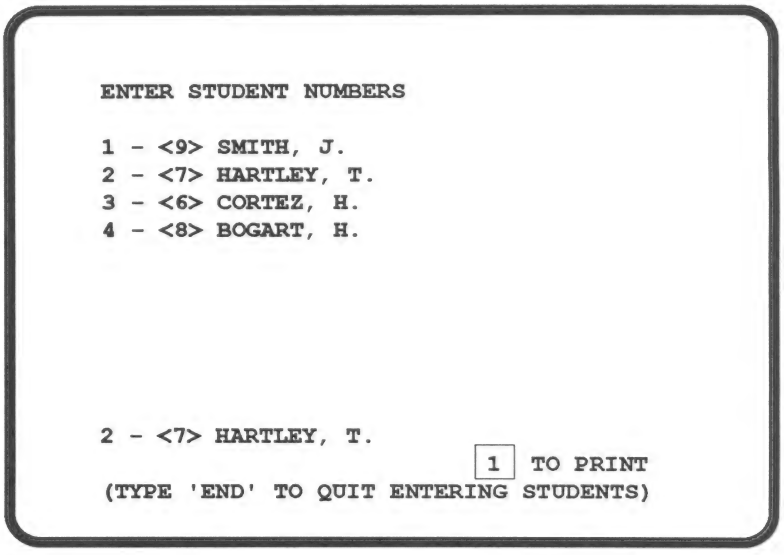
As you select the students whose records you want to view, you will by typing just the number, not the name. Type the number of the student you want to see and press RETURN.



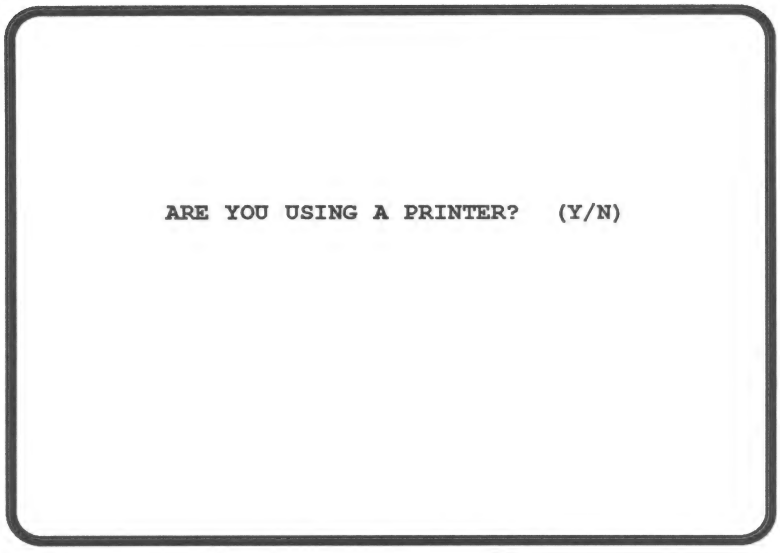
The computer keeps a running tally on the number of students you have chosen.

For example: If you type **2**, the lesson name and student name will appear at the bottom of this frame.

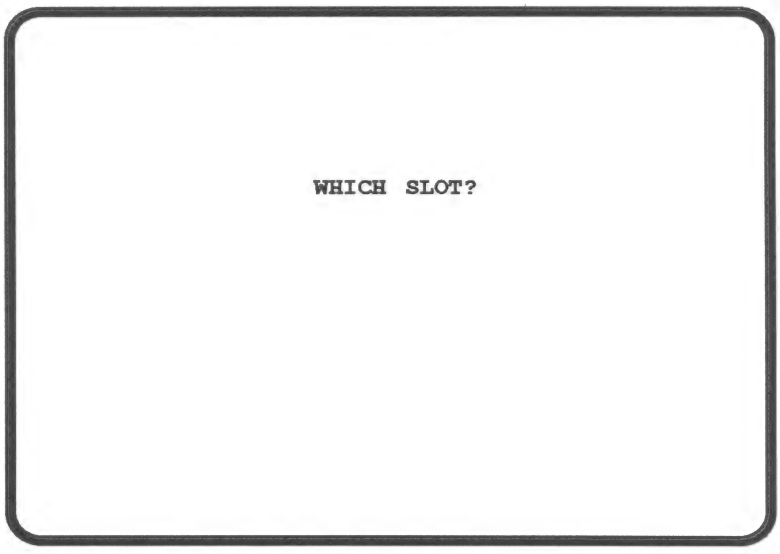
This is a check. Press RETURN if that is the student you wish to see. This gives you a chance to change your mind and type **N** if you don't want to see that particular student.



Continue selecting students whose records you want to see. When you have entered all of the students you wish to see, type **END** (in place of another number) and press RETURN. The following frame will appear:



If you type **Y**, you will be asked:



If you reply **N** to the question about the printer, the records will come up on your screen.

A typical student records looks like this.

```
STUDENT: TIM
LESSON : 7
CONCEPT: BUILDING TENS (2 DGT + 1 DGT)
-----------------------------------------

THERE ARE 20 EXERCISES IN THE LESSON.

TIM HAD 7 CORRECT ON 1ST TRY
AND ESCAPED AFTER 7 EXERCISES.
-----------------------------------------
```

3 - Print Student Summary

If you choose this option from the Student Planning menu, you will be able to see a summary of the records for the entire class. The summary is in the following format.

```
STUDENT NAME        LESSON       SCORE
----------------    ------       -------

SMITH, J.             9          100%
HARTLEY, T.           7           35%
CORTEZ, H.            6           85%
BOGART, H.            8           66%


                PRESS RETURN
```

The printed format differs slightly from the screen format. The printed summary includes more information which would not fit on the screen.

STUDENT NAME	LESSON	SCORE	LESSON CONTENT
SMITH, J	9	100% (20/20)	BUILDING TENS PRACTICE EXERCISES
HARTLEY, T.	7	35% (7/20) <ESC>	BUILDING TENS W/O DOTS
CORTEZ, H.	6	85% (17/20)	BUILDING TENS (2 DGT + 1 DGT)
BOGART, H.	8	66% (20/30)	BUILDING TENS (2 PATTERNS)

4 - Delete all students

If you want to clear all of your student records, use this option.

5 - Delete individual students

A number of teachers have asked for this option. This is most valuable when several teachers are using the same disk. This allows you to print the records of just a few of your students and then erase only those selected records from the file.

ANSWER KEYS TO WORKSHEETS

Building TENS Strategy

Worksheet 1

Skill: Counting dots—sets of 5 or less

Name_____

How many dots? 3

(1) 3 (6) 1

(2) 4 (7) 5

(3) 1 (8) 2

(4) 2 (9) 3

(5) 5 (10) 4

Have the student count the dots.

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Building TENS Strategy

Worksheet 2

Skill: Counting dots—5 to 10 in each set

Name_____

How many dots? 7

(1) 6 (6) 9

(2) 7 (7) 8

(3) 9 (8) 10

(4) 6 (9) 7

(5) 8 (10) 5

Have the student count the dots.

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Building TENS Strategy

Worksheet 3

Skill: Recognizing patterns

Name_____

How many?

(1) 1 (7) 3

(2) 5 (8) 7

(3) 7 (9) 8

(4) 4 (10) 5

(5) 10 (11) 9

(6) 2 (12) 6

This worksheet should be timed. (Allow 2 sec. per picture.)

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Building TENS Strategy

Worksheet 4

Skill: Determining number of dots to build a ten

Name_____

Build a ten.

(1) How many to build a ten? 1

(2) How many to build a ten? 3

(3) How many to build a ten? 2

(4) How many to build a ten? 3

(5) How many to build a ten? 5

(6) How many to build a ten? 2

(7) How many to build a ten? 4

(8) How many to build a ten? 5

(9) How many to build a ten? 1

(10) How many to build a ten? 2

Have student draw dots to build a ten. "How many did you need?"

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ANSWER KEYS TO WORKSHEETS

Building TENS Strategy — Worksheet 4 *continued*

Skill: Determining number of dots to build a ten

Name _____

Build a ten.

(11) How many to build a ten? 4

(12) How many to build a ten? 1

(13) How many to build a ten? 3

(14) How many to build a ten? 2

(15) How many to build a ten? 5

(16) How many to build a ten? 5

(17) How many to build a ten? 4

(18) How many to build a ten? 1

(19) How many to build a ten? 3

(20) How many to build a ten? 2

Have student draw dots to build a ten. "How many did you need?"

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Building TENS Strategy — Worksheet 5

Skill: Building tens by moving dots (2 patterns)

Name _____

Build a ten.

(1) Build a ten. Cross out dots.

(2)

(3)

(4)

(5)

(6)

Have the student draw the dots needed to build a ten and then cross the 'used' dots off the bottom pattern.

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Building TENS Strategy — Worksheet 5 *continued*

Skill: Building tens by moving dots (2 patterns)

Name _____

Build a ten.

(7) Build a ten. Cross out dots.

(8)

(9)

(10)

(11)

(12)

Have the student draw the dots needed to build a ten and then cross the 'used' dots off the bottom pattern.

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Building TENS Strategy — Worksheet 6

Skill: Building tens - determining what is left

Name _____

(1) Build a ten. 10 — How many will be left here? 4 — 14 sum

(2) Build a ten. 10 — How many will be left here? 8 — 18 sum

(3) Build a ten. 10 — How many will be left here? 2 — 12 sum

(4) Build a ten. 10 — How many will be left here? 3 — 13 sum

Have the student enter the correct number of dots to build a ten and then cross the 'used' dots off the bottom pattern. Enter numbers where indicated.

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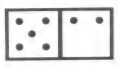
ANSWER KEYS TO WORKSHEETS

Building TENS Strategy — Worksheet 6 *continued*

Name _____

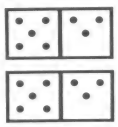
Skill: Building tens - determining what is left

(5) 

Build a ten. 10

How many will be left here? 7

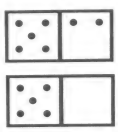
17 sum

(6) 

Build a ten. 10

How many will be left here? 6

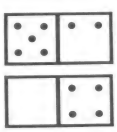
16 sum

(7) 

Build a ten. 10

How many will be left here? 2

12 sum

(8) 

Build a ten. 10

How many will be left here? 1

11 sum

Have the student enter the correct number of dots to build a ten and then cross the 'used' dots off the bottom pattern. Enter numbers where indicated.

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Building TENS Strategy — Worksheet 7

Name _____

Skill: Building tens without dot patterns

		How many to build a ten?	How much is left?	Sum
(1)	8 +7 =	(8 + 2) =	10 + 5 =	15
(2)	9 +3 =	(9 + 1) =	10 + 2 =	12
(3)	7 +5 =	(7 + 3) =	10 + 2 =	12
(4)	8 +6 =	(8 + 2) =	10 + 4 =	14
(5)	6 +5 =	(6 + 4) =	10 + 1 =	11

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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Building TENS Strategy — Worksheet 7 *continued*

Name _____

Skill: Building tens without dot patterns

(6)	9 +6 =	(9 + 1) =	10 + 5 =	15
(7)	8 +8 =	(8 + 2) =	10 + 6 =	16
(8)	8 +4 =	(8 + 2) =	10 + 2 =	12
(9)	7 +6 =	(7 + 3) =	10 + 3 =	13
(10)	9 +7 =	(9 + 1) =	10 + 6 =	16

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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Building TENS Strategy — Worksheet 8

Name _____

Skill: Review and practice building tens concepts

		How many to build a ten?		
(1)	28 +7 =	(28 + 2) =	30 + 5 = 35	How much
(2)	47 +6 =	(47 + 3) =	50 + 3 = 53	
(3)	29 +7 =	(29 + 1) =	30 + 6 = 36	
(4)	38 +6 =	(38 + 2) =	40 + 4 = 44	
(5)	29 +4 =	(29 + 1) =	30 + 3 = 33	

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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ANSWER KEYS TO WORKSHEETS

Building TENS Strategy — Worksheet 8 *continued*

Skill: Review and practice building tens concepts.

Name _____

(6)	56 +5	=	(56 + 4)	=	60 + 1	61
(7)	17 +6	=	(17 + 3)	=	20 + 3	23
(8)	24 +7	=	(24 + 6)	=	30 + 1	31
(9)	33 +9	=	(33 + 7)	=	40 + 2	42
(10)	22 +9	=	(22 + 8)	=	30 + 1	31

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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Building TENS Strategy — Worksheet 9

Skill: Changing a problem to an easier form

Name _____

	Not so Nice Problem	Nice Problem	Answer
(1)	68 + 7	70+5	75
(2)	37 + 5	40+2	42
(3)	79 + 4	80+3	83
(4)	46 + 6	50+2	52
(5)	18 + 4	20+2	22
(6)	18 + 5	20+3	23
(7)	38 + 5	40+3	43
(8)	26 + 5	30+1	31
(9)	56 + 6	60+2	62
(10)	88 + 5	90+3	93

Have the student write a "nice" problem. One numeral should be a multiple of 10.

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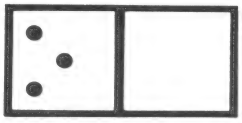
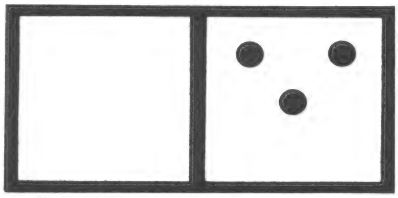
Building TENS Strategy

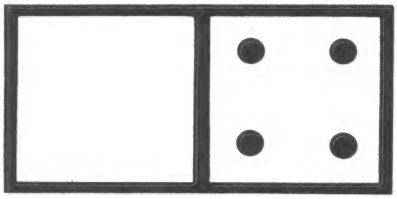
Worksheet 1

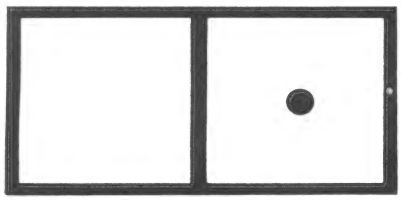
Skill: Counting dots—sets of 5 or less

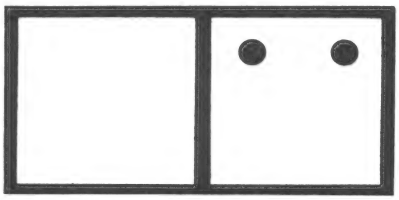
Name _____

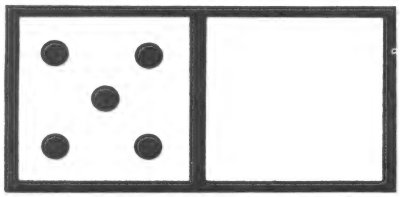
How many dots?  3

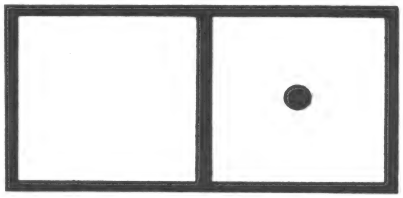
(1)  _____

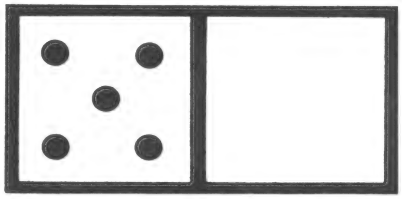
(2)  _____

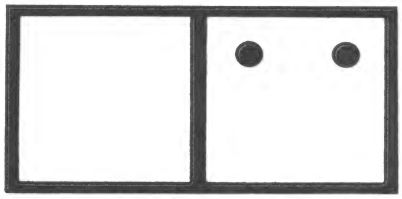
(3)  _____

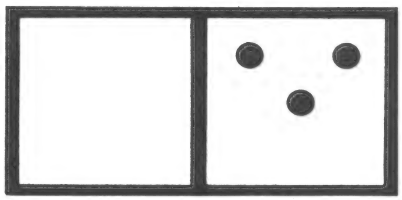
(4)  _____

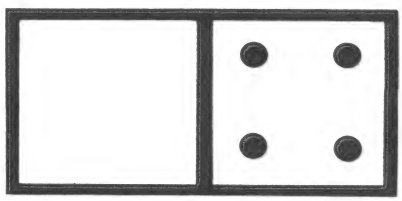
(5)  _____

(6)  _____

(7)  _____

(8)  _____

(9)  _____

(10)  _____

Have the student count the dots.

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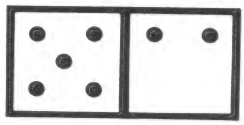
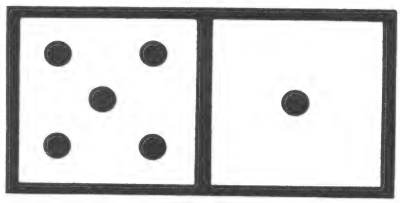
Building TENS Strategy

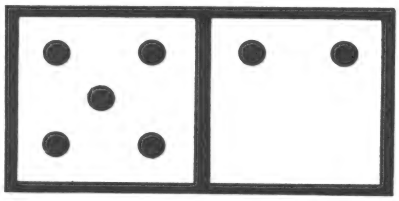
Worksheet 2

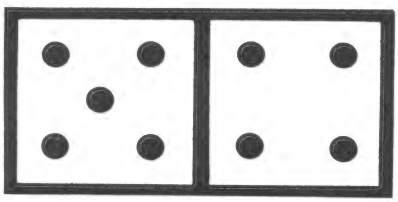
Skill: Counting dots—5 to 10 in each set

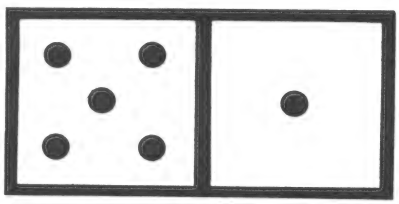
Name _____

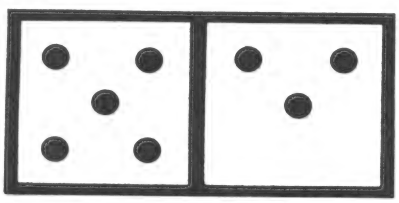
How many dots?  7

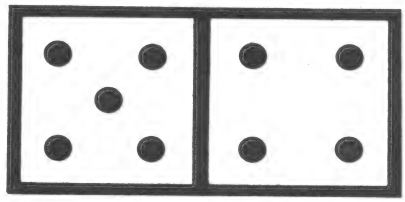
(1)  _____

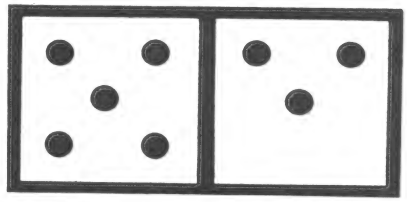
(2)  _____

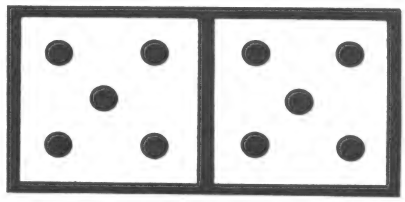
(3)  _____

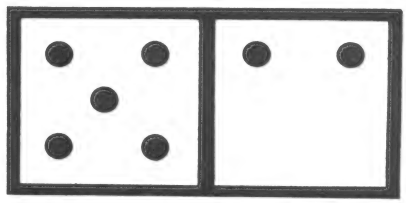
(4)  _____

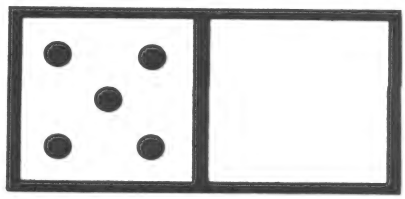
(5)  _____

(6)  _____

(7)  _____

(8)  _____

(9)  _____

(10)  _____

Have the student count the dots.

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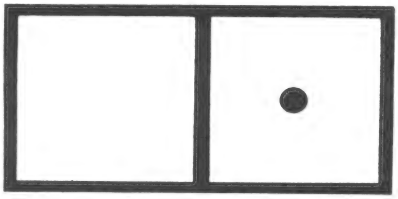
Building TENS Strategy

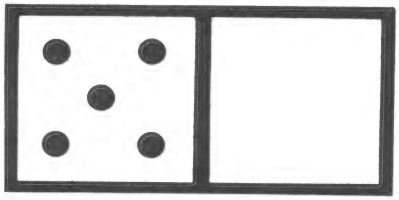
Worksheet 3

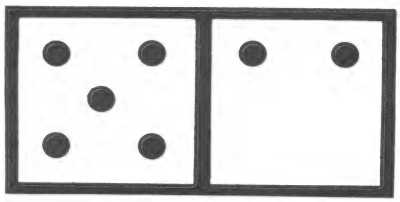
Skill: Recognizing patterns

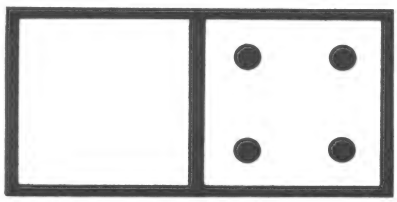
Name _____

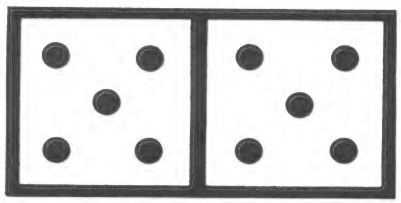
How many?

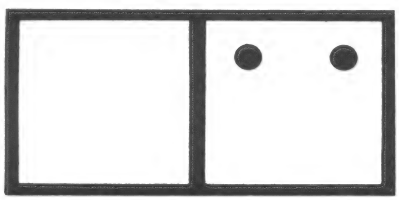
(1)  1

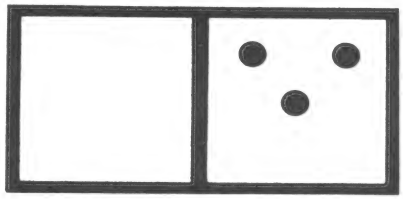
(2)  _____

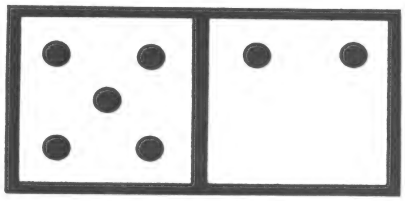
(3)  _____

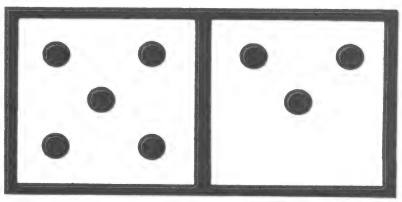
(4)  _____

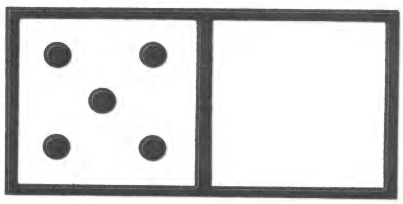
(5)  _____

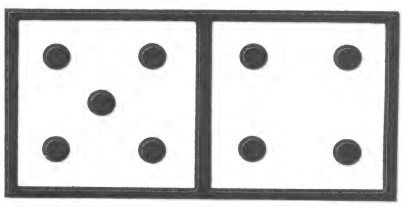
(6)  _____

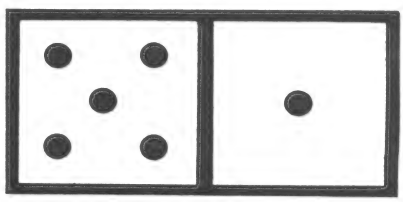
(7)  _____

(8)  _____

(9)  _____

(10)  _____

(11)  _____

(12)  _____

This worksheet should be timed.
(Allow 2 sec. per picture.)

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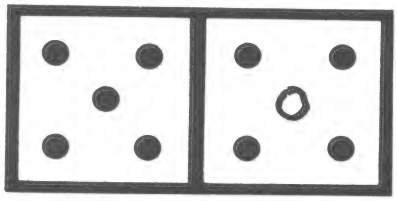
Building TENS Strategy

Worksheet 4

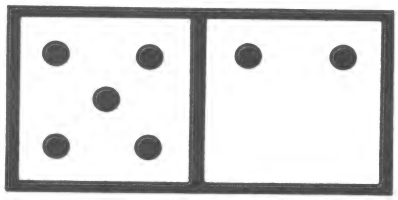
Skill: Determining number of dots to build a ten

Name _____

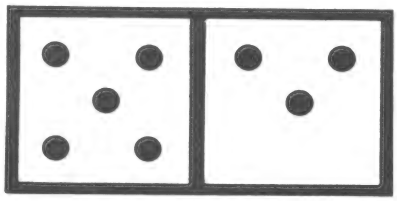
Build a ten.

(1) 

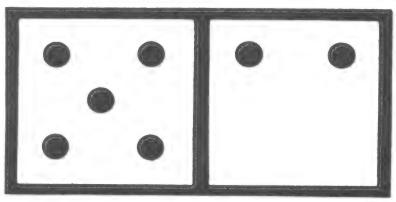
How many to build a ten? 1

(2) 

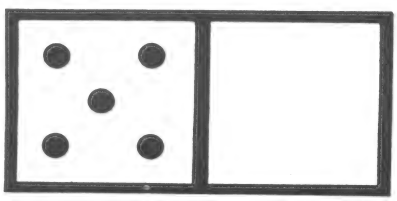
How many to build a ten? _____

(3) 

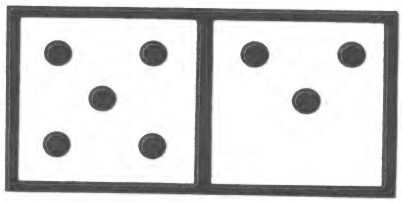
How many to build a ten? _____

(4) 

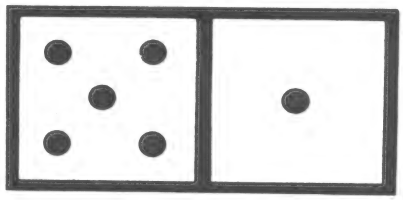
How many to build a ten? _____

(5) 

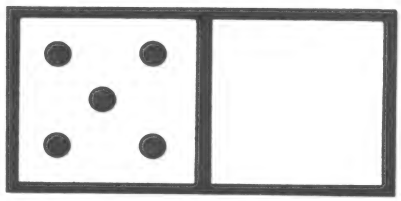
How many to build a ten? _____

(6) 

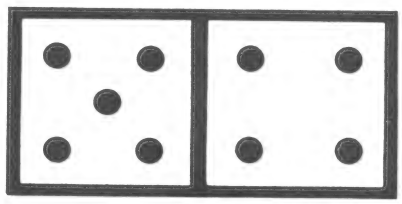
How many to build a ten? _____

(7) 

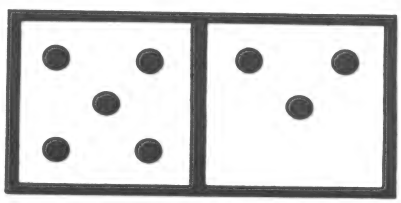
How many to build a ten? _____

(8) 

How many to build a ten? _____

(9) 

How many to build a ten? _____

(10) 

How many to build a ten? _____

Have student draw dots to build a ten.
"How many did you need?"

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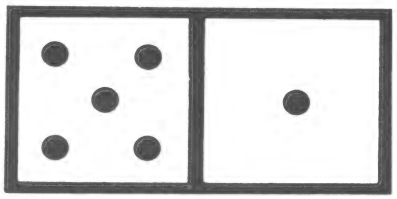
Building TENS Strategy

Worksheet 4 *continued*

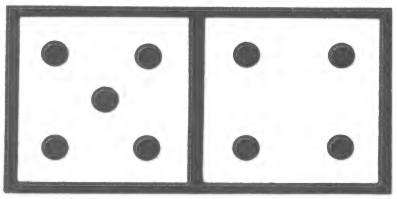
Skill: Determining number of dots to build a ten

Name _____

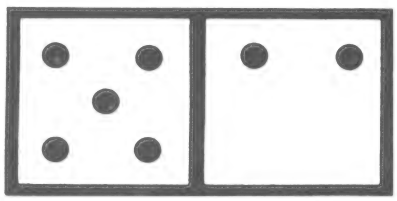
Build a ten.

(11) 

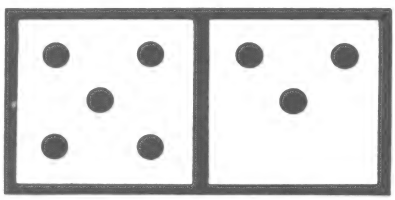
How many to build a ten? _____

(12) 

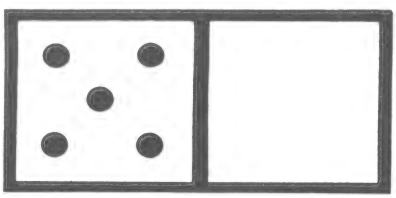
How many to build a ten? _____

(13) 

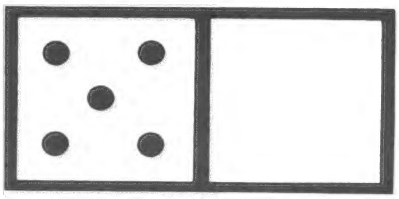
How many to build a ten? _____

(14) 

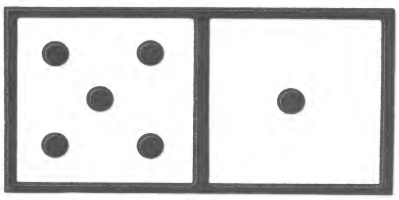
How many to build a ten? _____

(15) 

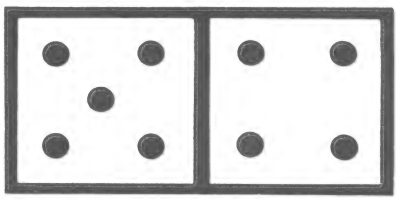
How many to build a ten? _____

(16) 

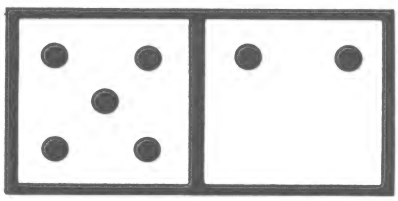
How many to build a ten? _____

(17) 

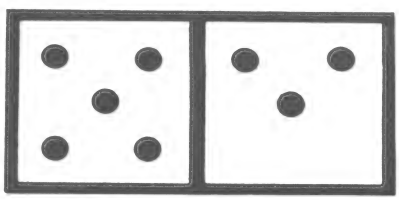
How many to build a ten? _____

(18) 

How many to build a ten? _____

(19) 

How many to build a ten? _____

(20) 

How many to build a ten? _____

Have student draw dots to build a ten.
"How many did you need?"

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Building TENS Strategy

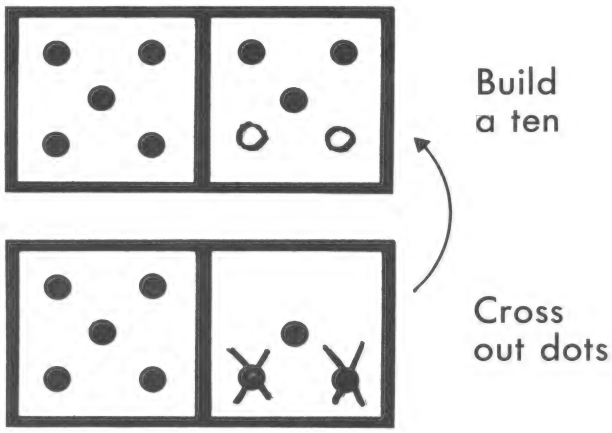
Worksheet 5

Skill: Building tens by moving dots (2 patterns)

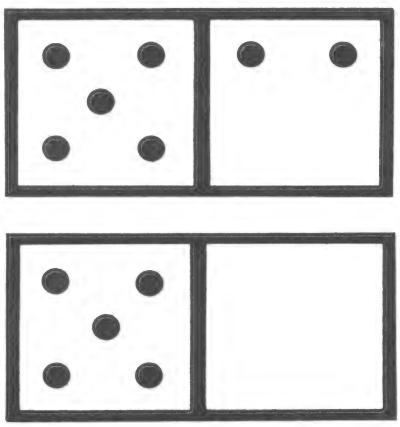
Name _____

Build a ten.

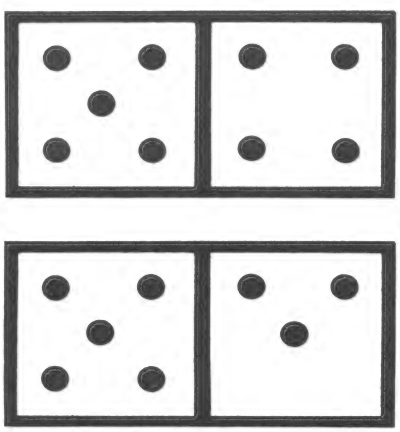
(1)



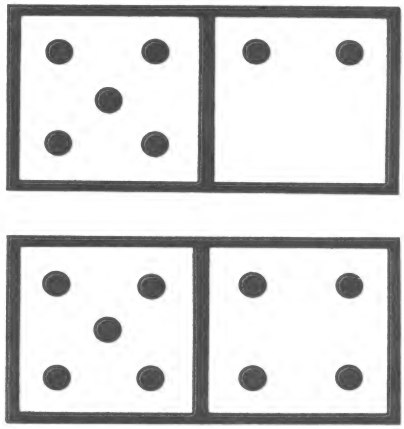
(2)



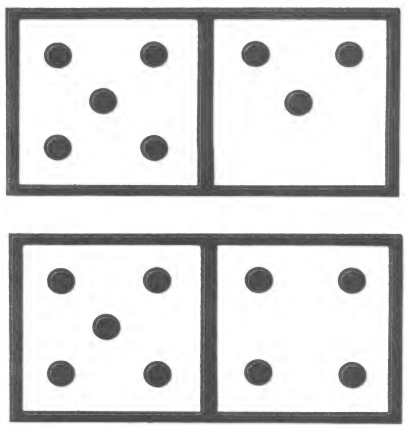
(3)



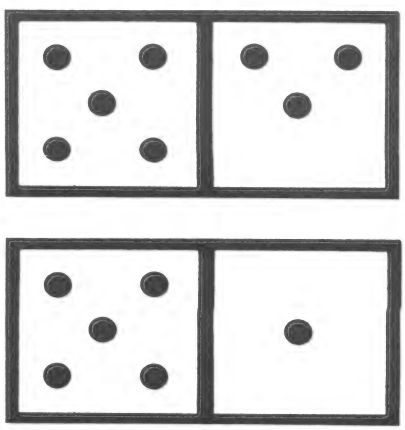
(4)



(5)



(6)



Have the student draw the dots needed to build a ten and then cross the 'used' dots off the bottom pattern.

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Building TENS Strategy

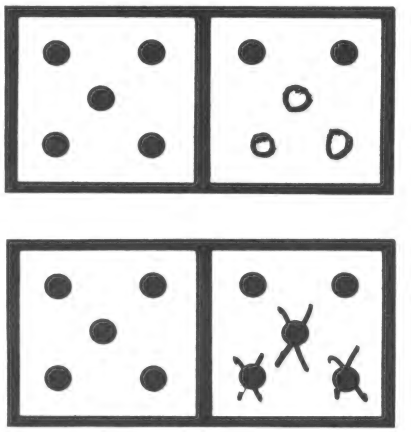
Worksheet 5 *continued*

Skill: Building tens by moving dots (2 patterns)

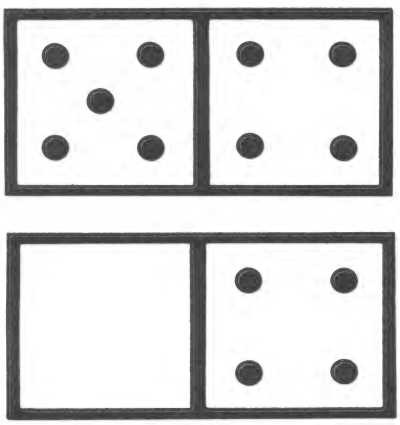
Name _____

Build a ten.

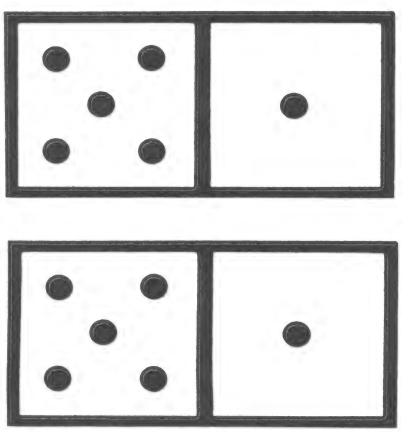
(7)



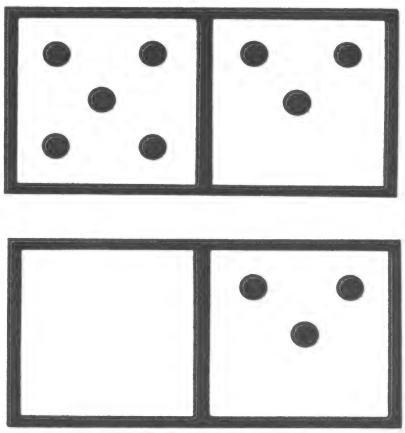
(8)



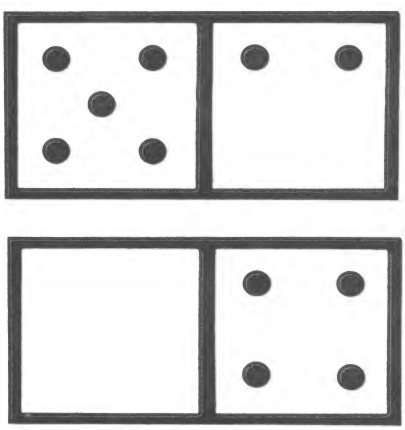
(9)



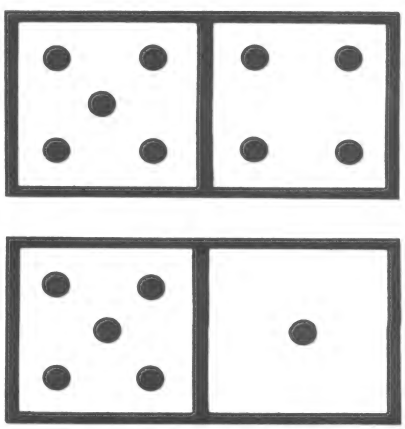
(10)



(11)



(12)



Have the student draw the dots needed to build a ten and then cross the 'used' dots off the bottom pattern.

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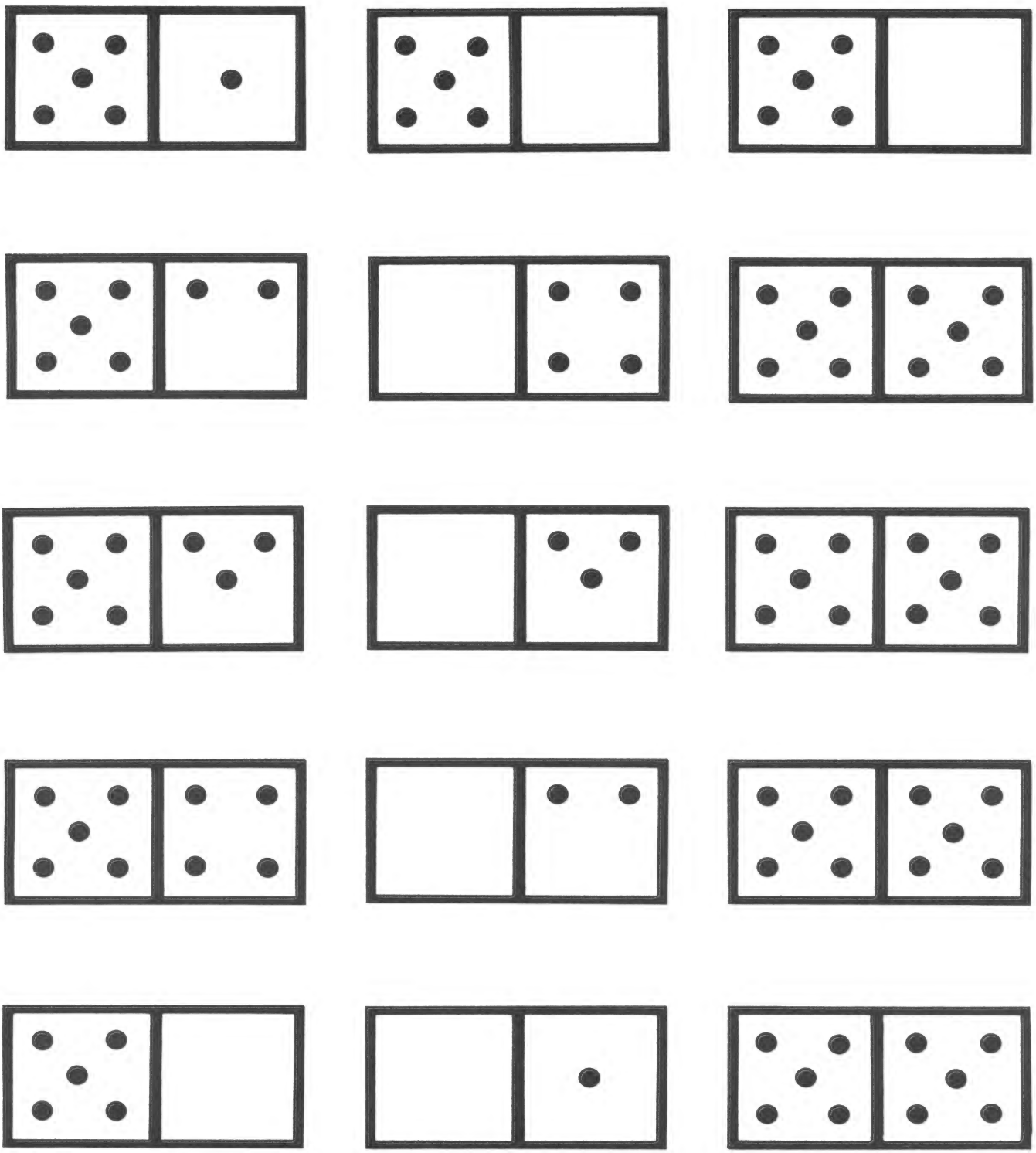


Here's some dot patterns to use when making your flash cards and worksheets.

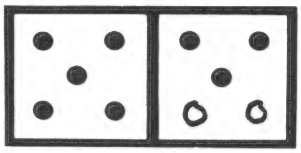
Building TENS Strategy

Worksheet 6

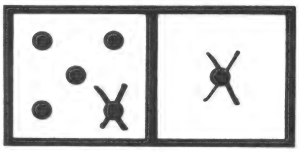
Skill: Building tens - determining what is left

Name _____

(1)



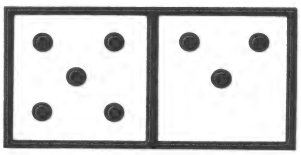
← Build a ten. 10



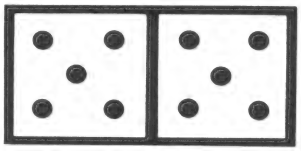
← How many will be left here? 4

14 sum

(2)



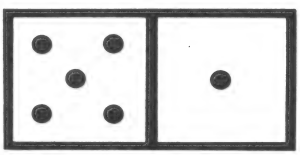
Build a ten. _____



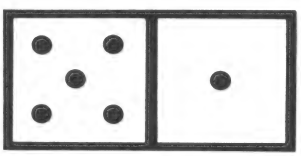
How many will be left here? _____

sum

(3)



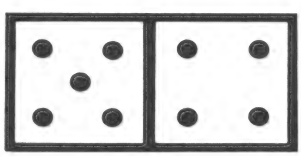
Build a ten. _____



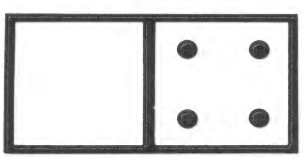
How many will be left here? _____

sum

(4)



Build a ten. _____



How many will be left here? _____

sum

Have the student enter the correct number of dots to build a ten and then cross the 'used' dots off the bottom pattern. Enter numbers where indicated.

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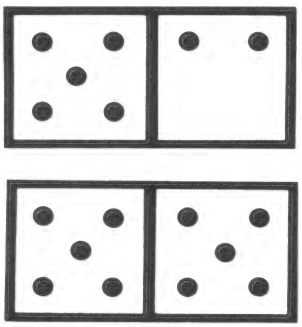
Building TENS Strategy

Worksheet 6 *continued*

Skill: Building tens - determining what is left

Name _____

(5)

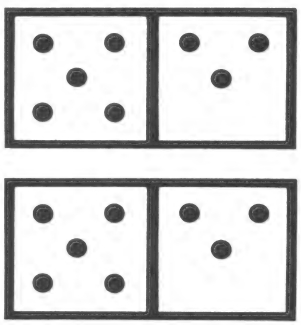


Build a ten. _____

How many will be left here? _____

sum

(6)

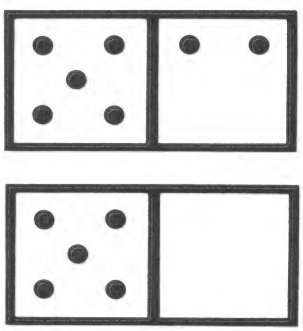


Build a ten. _____

How many will be left here? _____

sum

(7)

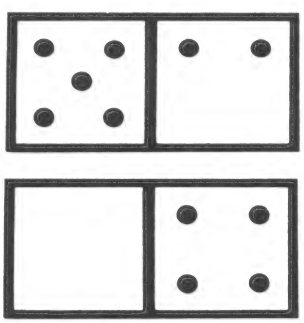


Build a ten. _____

How many will be left here? _____

sum

(8)



Build a ten. _____

How many will be left here? _____

sum

Have the student enter the correct number of dots to build a ten and then cross the 'used' dots off the bottom pattern. Enter numbers where indicated.

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Building TENS Strategy

Worksheet 7

Skill: Building tens without dot patterns.

Name _____

			How many to build a ten?		How much is left?		Sum
(1)	8 + 7	=	(8 + 2)	=	10 + 5	=	15
(2)	9 + 3	=	(9 + ☐)	=	10 + ☐	=	☐
(3)	7 + 5	=	(7 + ☐)	=	10 + ☐	=	☐
(4)	8 + 6	=	(8 + ☐)	=	10 + ☐	=	☐
(5)	6 + 5	=	(6 + ☐)	=	10 + ☐	=	☐

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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Building TENS Strategy

Worksheet 7 *continued*

Skill: Building tens without dot patterns.

Name _____

(6) $\begin{array}{r} 9 \\ +6 \\ \hline \end{array} = (9 + \square) = \begin{array}{r} 10 \\ + \square \\ \hline \end{array} = \square$

(7) $\begin{array}{r} 8 \\ +8 \\ \hline \end{array} = (8 + \square) = \begin{array}{r} 10 \\ + \square \\ \hline \end{array} = \square$

(8) $\begin{array}{r} 8 \\ +4 \\ \hline \end{array} = (8 + \square) = \begin{array}{r} 10 \\ + \square \\ \hline \end{array} = \square$

(9) $\begin{array}{r} 7 \\ +6 \\ \hline \end{array} = (7 + \square) = \begin{array}{r} 10 \\ + \square \\ \hline \end{array} = \square$

(10) $\begin{array}{r} 9 \\ +7 \\ \hline \end{array} = (9 + \square) = \begin{array}{r} 10 \\ + \square \\ \hline \end{array} = \square$

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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Building TENS Strategy

Worksheet 8

Skill: Review and practice building tens concepts.

Name _____

How many to build a ten?

(1) $\begin{array}{r} 28 \\ +7 \\ \hline \end{array}$ = $(28 + \boxed{2}) =$ $\begin{array}{r} 30 \\ +\ \boxed{5} \\ \hline \boxed{35} \end{array}$ How much

(2) $\begin{array}{r} 47 \\ +6 \\ \hline \end{array}$ = $(47 + \square) =$ $\begin{array}{r} 50 \\ +\ \square \\ \hline \square \end{array}$

(3) $\begin{array}{r} 29 \\ +7 \\ \hline \end{array}$ = $(29 + \square) =$ $\begin{array}{r} 30 \\ +\ \square \\ \hline \square \end{array}$

(4) $\begin{array}{r} 38 \\ +6 \\ \hline \end{array}$ = $(38 + \square) =$ $\begin{array}{r} 40 \\ +\ \square \\ \hline \square \end{array}$ =

(5) $\begin{array}{r} 29 \\ +4 \\ \hline \end{array}$ = $(29 + \square) =$ $\begin{array}{r} 30 \\ +\ \square \\ \hline \square \end{array}$

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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Building TENS Strategy

Worksheet 8 *continued*

Skill: Review and practice building tens concepts.

Name _____

(6) $\begin{array}{r} 56 \\ +5 \\ \hline \end{array} = \underline{\quad (56 + \square) \quad} = \begin{array}{r} 60 \\ +\ \square \\ \hline \square \end{array}$

(7) $\begin{array}{r} 17 \\ +6 \\ \hline \end{array} = \underline{\quad (17 + \square) \quad} = \begin{array}{r} 20 \\ +\ \square \\ \hline \square \end{array}$

(8) $\begin{array}{r} 24 \\ +7 \\ \hline \end{array} = \underline{\quad (24 + \square) \quad} = \begin{array}{r} 30 \\ +\ \square \\ \hline \square \end{array}$

(9) $\begin{array}{r} 33 \\ +9 \\ \hline \end{array} = \underline{\quad (33 + \square) \quad} = \begin{array}{r} 40 \\ +\ \square \\ \hline \square \end{array}$

(10) $\begin{array}{r} 22 \\ +9 \\ \hline \end{array} = \underline{\quad (22 + \square) \quad} = \begin{array}{r} 30 \\ +\ \square \\ \hline \square \end{array}$

First, have the student find the number needed to build a ten. Next, compute what is left. Finally, write the sum.

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Building TENS Strategy

Worksheet 9

Skill: Changing a problem to an easier form

Name _____

Not so Nice Problem	Nice Problem	Answer
(1) 68 + 7	70+5	75
(2) 37 + 5		
(3) 79 + 4		
(4) 46 + 6		
(5) 18 + 4		
(6) 18 + 5		
(7) 38 + 5		
(8) 26 + 5		
(9) 56 + 6		
(10) 88 + 5		

Have the student write a "nice" problem. One numeral should be a multiple of 10.

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This program helps children build a basic strategy for rapid calculation of addition and subtraction exercises.

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Based on research in how children learn, this approach has been successfully used by teachers for both gifted children and children who find learning more difficult.

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About the author

Dr. William Swart is a professor of Mathematics Education at Central Michigan University in Mt. Pleasant, Michigan. He received his doctorate in education from the University of Michigan and has taught mathematics in all grade levels. Bill has devoted 15 years to researching and developing elementary mathematics curriculum materials and methods. He is currently working with learning disabled students, grade 4. He is a frequent speaker at state and national mathematics education conferences and serves as a consultant to elementary schools. In addition, Bill is the author of TRICON Mathematics for grades K-6, several articles in Arithmetic Teacher and numerous monographs on elementary mathematics.

T.M.